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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,235	04/20/2004	Jun Ogasawara	OGAS3003D/REF	2527

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EXAMINER
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MAYES, MELVIN C

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 05/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/827,235

Applicant(s)

OGASAWARA ET AL.

Examiner

Melvin Curtis Mayes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 7-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

(1)

The disclosure is objected to because of the following informalities: Reference to "Fig. 1" should be added to the Brief Description Of The Drawings.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

(2)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(3)

Claims 7-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 claims sintering "to thereby produce the ceramic **green sheets**..." Does Applicant mean "to thereby produce the ceramic capacitor" since the green sheets form the capacitor after sintering?

***Claim Rejections - 35 USC § 103***

(4)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(5)

Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Venigalla et al. 2004/0248724.

Venigalla et al. disclose a method of making a ceramic capacitor comprising: providing barium titanate dielectric particles; forming green layers of dielectric particles and binder; forming patterned electrode material on the green layers; stacking green layers; dicing to form capacitor cubes; and sintering the particles of the barium titanate-based material, wherein the particles fuse and consolidate to form grains. Venigalla et al. disclose that it is desirable to increase the A/B ratio of the dielectric composition to greater than 1.0 to increase compatibility with base metal electrodes and disclose that the A/B ratio may be adjusted to a value greater than 1 by coating a barium compound such as barium carbonate onto the surfaces of the barium titanate-based particles. Venigalla et al. disclose coating the barium titanate-based particles with a sintering aid by mixing a silicate such as barium silicate with a silicon ionic species in a solution of silicon alkoxide such as tetraethoxysilane and coating the particles with the sintering aid, the presence of the barium silicate in the sintering aid increasing the A/B ratio of the dielectric to greater than 1.0 [0003]-[0051].

By coating the surfaces of the barium titanate dielectric particles with a tetraethoxysilane solution of sintering aid containing barium silicate, either with or without a coating of barium

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carbonate, which increases the A/B ratio of the dielectric to greater than 1.0, the sintered capacitor obviously includes ceramic grains of barium titanate dielectric with A/B ratio of an outer portion being greater than that of an inner portion thereof, as claimed. The obvious result of sintering barium titanate particles coated with a solution of sintering aid containing barium silicate and with or without barium carbonate would be ceramic grains having an A/B ratio greater on their outer portions than their inner portions, as claimed.

(6)

Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Venigalla et al. 2004/0248724 in view of Kerchner et al. 2002/0150777.

Venigalla et al. disclose a method of making a ceramic capacitor comprising: providing barium titanate dielectric particles; forming green layers of dielectric particles and binder; forming patterned electrode material on the green layers; stacking green layers; dicing to form capacitor cubes; and sintering the particles of the barium titanate-based material, wherein the particles fuse and consolidate to form grains. Venigalla et al. disclose that it is desirable to increase the A/B ratio of the dielectric composition to greater than 1.0 to increase compatibility with base metal electrodes and disclose that the A/B ratio may be adjusted to a value greater than 1 by coating a barium compound such as barium carbonate onto the surfaces of the barium titanate-based particles. Venigalla et al. further disclose coating the barium titanate-based particles with a sintering aid by mixing a silicate such as barium silicate with a silicon ionic species in a solution of silicon alkoxide such as tetraethoxysilane and coating the particles with the sintering aid, the presence of the barium silicate in the sintering aid increasing the A/B ratio of the dielectric to greater than 1.0 [0003]-[0051].

Kerchner et al. teach that in making a capacitor, the A/B ratio of a dielectric is adjusted to ratios of between 1.05 and 1.15 to improve compatibility with base metal electrodes [0044].

By coating the surfaces of the barium titanate dielectric particles with a tetraethoxysilane solution of sintering aid containing barium silicate, either with or without a coating of barium carbonate, which increases the A/B ratio of the dielectric to greater than 1.0, the sintered capacitor obviously includes ceramic grains of barium titanate dielectric with A/B ratio of an outer portion being greater than that of an inner portion thereof, as claimed. The obvious result of sintering barium titanate particles coated with a solution of sintering aid containing barium silicate and with or without barium carbonate would be ceramic grains having an A/B ratio greater on their outer portions than their inner portions, as claimed.

Providing the amount of barium silicate and/or barium carbonate within the ranges as claimed in Claims 8-10 would have been obvious to one of ordinary skill in the art to increase the A/B ratio of the barium titanate to between 1.05 and 1.15, as taught by Kerchner et al., to improve compatibility with base metal electrodes. It would have been obvious to one of ordinary skill in the art that to increase the A/B ratio to between 1.05 and 1.15 to include at least 0.05 mole and/or 0.1 parts by weight, as claimed, of barium silicate and/or barium carbonate for coating the dielectric particles.

(7)

Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Venigalla et al. 2002/0091059 in view of Venigalla et al. 2004/0248724.

Venigalla et al. disclose a method of making a MLCC (multilayer ceramic capacitor) comprising: coating barium titanate particles with a dopant metal compound such as  $\text{BaMoO}_4$  or

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BaWO<sub>4</sub>; and using the particles to make an MLCC. Because the dopant containing an A group element, the A/B ratio for the composition is greater than 1.0 and improves compatibility of the dielectric with base metal electrodes. The amount of the dopant present is between 0.0025 and 1.0 wt% based on the total weight of the particulate composition [0017]-[0022].

Venigalla et al. teach that a MLCC is usually prepared by providing barium titanate dielectric particles, forming green layers of dielectric particles and binder, forming patterned electrode material on the green layers, stacking green layers, dicing to form capacitor cubes and sintering the particles of the barium titanate-based material, wherein the particles fuse and consolidate to form grains [0004].

By coating the surfaces of the barium titanate particles with a dopant metal compound such as BaMoO<sub>4</sub> or BaWO<sub>4</sub> so that the A/B ratio for the composition is greater than 1.0 to improve compatibility of the dielectric with base metal electrodes and using the particles to make an MLCC, by the usual process as taught by Venigalla et al., the sintered capacitor obviously includes ceramic grains of barium titanate dielectric with A/B ratio of an outer portion being greater than that of an inner portion thereof, as claimed. The obvious result of sintering barium titanate particles coated with BaMoO<sub>4</sub> or BaWO<sub>4</sub> so that the A/B ratio for the composition is greater than 1.0 would be ceramic grains having an A/B ratio greater on their outer portions than their inner portions, as claimed.

By providing the BaMoO<sub>4</sub> or BaWO<sub>4</sub> in an amount between 0.0025 and 1.0 wt% based on the total weight of the particulate composition, the A-site component is obviously present in an amount encompassing the range of 0.05-0.1 mole and/or 0.1-1 part by weight, as claimed in Claims 8-10.

***Allowable Subject Matter***

(8)

Claim 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

(9)

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection, applied because of the amendment to Claim 7.

***Conclusion***

(10)

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,



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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


(11)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234.

The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Melvin Curtis Mayes  
Primary Examiner  
Art Unit 1734

MCM  
May 23, 2005